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Indian Standard

PRESSURIZED IRRIGATION SYSTEMS — GRAPHIC SYMBOLS

ICS 65.060.35

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 2003 **Price Group 3**

Irrigation and Farm Drainage Equipment and System Sectional Committee, FAD 54

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Irrigation and Farm Drainage Equipment and System Sectional Committee had been approved by the Food and Agriculture Division Council.

Pressurized irrigation systems are becoming very popular now-a-days in the field of agriculture. For efficient operation of these systems, it is essential that they have been designed properly. This standard has been prepared with the objective to ensure use of uniform symbols on drawings and diagrams concerning installation of these irrigation systems.

In preparation of this standard, assistance has been derived from Doc: ISO/TC23/SC 18/N 464 'Graphic symbols for pressurized irrigation systems', issued by International Organization for Standardization.

Indian Standard

PRESSURIZED IRRIGATION SYSTEMS — GRAPHIC SYMBOLS

1 SCOPE

This Indian Standard establishes conventional basic graphical symbols for use on drawings and diagrams concerning of irrigation systems.

2 REFERENCES

2.1 The following Indian Standard contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
14178 : 1994	Pressurized irrigation equipment — Terminology

3 DEFINITIONS

For the purpose of this standard, the definitions given in IS 14178 shall apply.

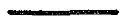
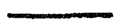
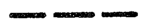
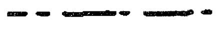
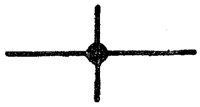
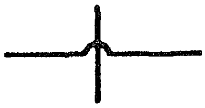
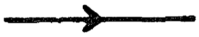
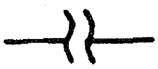
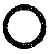
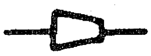
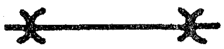
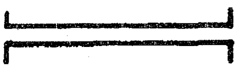
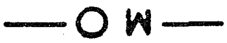
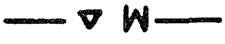
4 GENERAL RULES

4.1 A group of devices/components is represented by a general symbol. The general symbol shall be completed for any special component. In general, actuators may operate various types of valves. In this standard, various assemblies of actuators — valves are brought for only the basic valve.

4.2 The symbols for valves, piping and piping accessories, connections and junctions operations/functions, pumps, filters, water application equipment, chemical injector, irrigation machines, irrigation controller are given in tables 1 to 12.

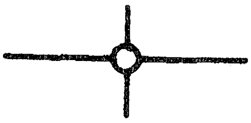
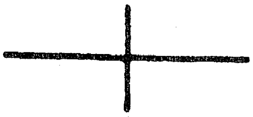
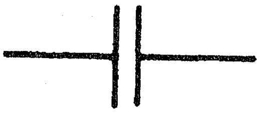
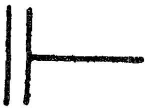
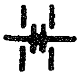
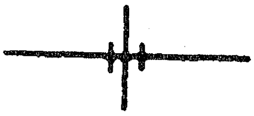
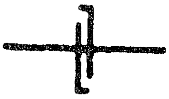
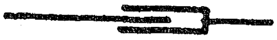
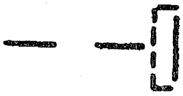
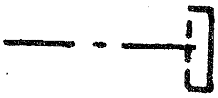
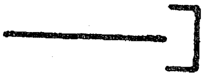
5 SYMBOLS FOR PIPING AND PIPING ACCESSORIES

Table 1 Symbols for Piping and Piping Accessories

No.	Designation	Symbol
5.1	Major (main) pipeline	 **(Width 1 mm)**
5.2	Minor (secondary) pipeline	 **(Width 0.5 mm)**
5.3	Future extension (planned) pipeline	
5.4	Existing pipeline that will be used	
5.5	Pipe (crossing) with connection	
5.6	Pipe (crossing) without connection	
5.7	Direction of flow	
5.8	Interruption of piping	
5.9	Pipe cross-section	
5.10	Concentric pipe bore change	
5.11	Abolition of pipe	
5.12	Pipe sleeve	
5.13	Domestic (drinking) water	
5.14	Reclaimed (irrigation) water	

6 SYMBOLS FOR CONNECTION AND JUNCTIONS

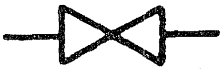
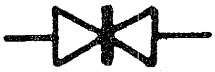
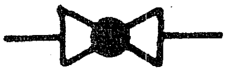
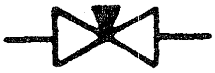
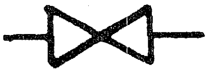
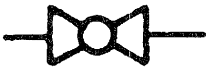
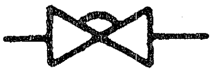
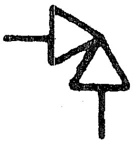
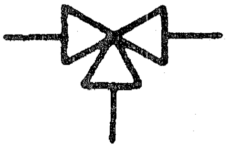
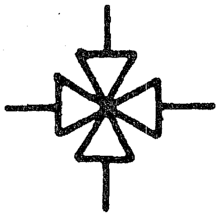
Table 2 Symbols for Connections and Junctions

No.	Designation	Symbol
6.1	Detachable junction	
6.2	Non-detachable junction	
6.3	Flanged and bolted	
6.4	End flanged and bolted	
6.5	Rotary flange	
6.6	Union	
6.7	Quick release coupling	
6.8	Expansion joint	
6.9	Male plug	
6.10	Female plug	
6.11	Endcap for pipe	

7 SYMBOLS FOR VALVES ACCORDING TO STRUCTURE

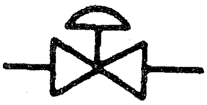
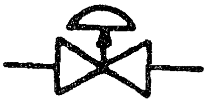
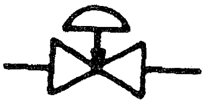
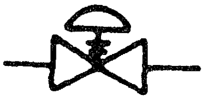
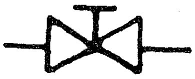
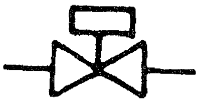
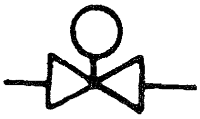
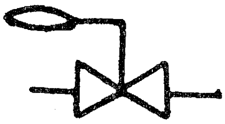
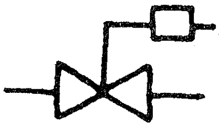
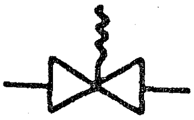
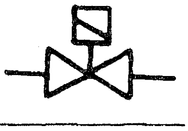
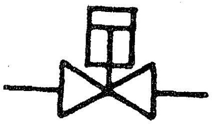
7.1 Symbols According to Type

Table 3 Symbols for Valves According to Structure

No.	Designation	Symbol
7.1.1	Valve-general symbol	
7.1.2	Gate type	
7.1.3	Globe type	
7.1.4	Needle type	
7.1.5	Butterfly type	
7.1.6	Ball type	
7.1.7	Diaphragm type	
7.1.8	Angle valve	
7.1.9	3-way valve	
7.1.10	4-way valve	

7.2 Symbols According to Operation

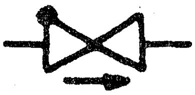
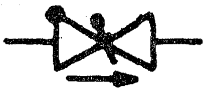
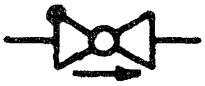
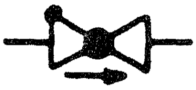
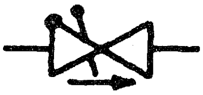
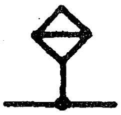
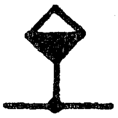
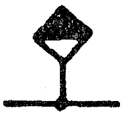
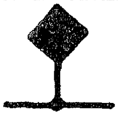
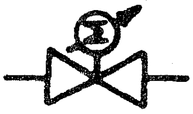
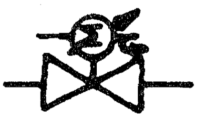
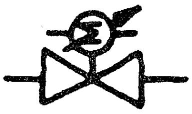
Table 4 Symbols According to Operation

No.	Designation	Symbol
7.2.1	Hydraulically or pneumatically operated valve	
7.2.1.1 (1)	Opens on failure (normally open)	
7.2.1.2 (1)	Closes on failure (normally closed)	
7.2.1.3 (1)	Retains position on failure	
7.2.2	Manually operated valve	
7.2.3	Magnetically operated valve	
7.2.4	Electrically operated valve	
7.2.5	Float operated valve	
7.2.6	Weight-load operated valve	
7.2.7	Spring operated valve	
7.2.8	Solenoid operated valve	
7.2.9	Piston operated valve	

NOTE — Options in **7.2.1.1** to **7.2.1.3** are valid also for **7.2.3**, **7.2.4**, **7.2.8** and **7.2.9**.

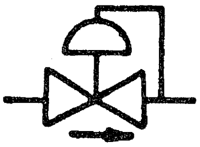
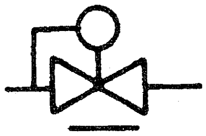
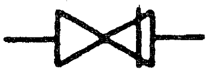
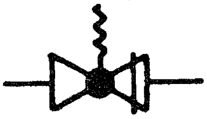
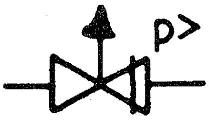
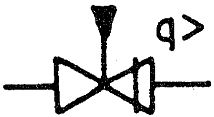
7.3 Symbols According to Function

Table 5 Symbols According to Function

No.	Designation	Symbol
7.3.1	Non-return valve (basic type)	
7.3.1.1	Non-return swing type	
7.3.1.2	Non-return ball type	
7.3.1.3	Non-return lift (globe) type	
7.3.1.4	Non-return tilt type	
7.3.2	Air release valve (basic type)	
7.3.2.1	Low pressure type	
7.3.2.2	High pressure type	
7.3.2.3	Dual-type function type	
7.3.3	Volumetric type	
7.3.3.1	Serial type	
7.3.3.2	Non-serial type	
7.3.4	Control valve	

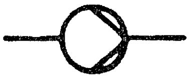
(*Continued on page 4*)

Table 5 (*concluded*)

No.	Designation	Symbol
7.3.4.1	Pressure reducing valve (pressure regulator)	
7.3.4.2	Flow regulation valve (flow regulator)	
7.3.5	Safety valve (basic type)	
7.3.5.1	Globe type spring loaded	
7.3.5.2	Opens when pressure, p, is higher than the set value	
7.3.5.3	Closes when flow, q, is higher than the set value	

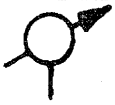
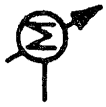
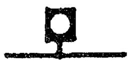
8 SYMBOL FOR PUMPS

Table 6 Symbol for Pumps

No.	Designation	Symbol
8.1	Pump (basic symbol)	

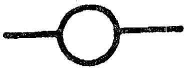
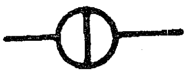
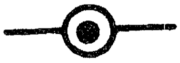
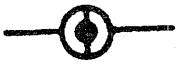
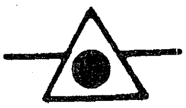
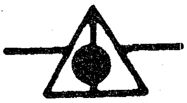
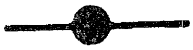
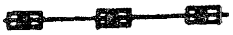
9 SYMBOLS FOR MEASURING DEVICES

Table 7 Symbols for Measuring Devices

No.	Designation	Symbol
9.1	Pressure gage	
9.2	Water meter	
9.3	Recorder	

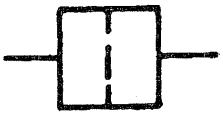
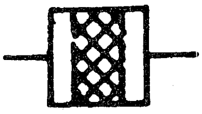
10 SYMBOLS FOR WATER APPLICATION EQUIPMENT

Table 8 Symbols for Water Application Equipment

No.	Designation	Symbol
10.1	Sprinkler	
10.1.1	Sprinkler full circle	
10.1.2	Sprinkler part circle	
10.2	Pop-up	
10.2.1	Pop-up full circle	
10.2.2	Pop-up part circle	
10.3	Sprayer	
10.3.1	Sprayer full circle	
10.3.2	Sprayer part circle	
10.4	Dripper (Emitter)	
10.5	Emitting pipe	

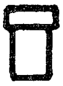
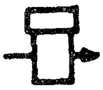
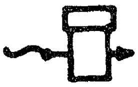
11 SYMBOLS FOR FILTERS

Table 9 Symbols for Filters

No.	Designation	Symbol
11.1	Filter, strainer type	
11.2	Filter, media type	

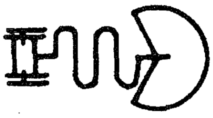
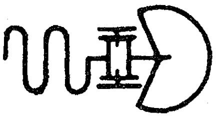
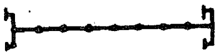
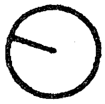
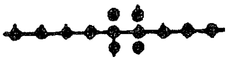
12 SYMBOLS FOR CHEMICAL INJECTORS

Table 10 Symbols for Chemical Injectors

No.	Designation	Symbol
12.1	Chemical injection tank	
12.2	Chemical injection pump-hydraulic	
12.3	Chemical injection pump-electrical	

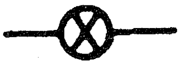
13 SYMBOLS FOR IRRIGATION MACHINES

Table 11 Symbols for Irrigation Machines

No.	Designation	Symbol
13.1	Irrigation machine -Reel machine	
13.2	Irrigation machine -Traveller machine	
13.3	Lateral move	
13.4	Center pivot	
13.5	Side roll	

14 SYMBOL FOR IRRIGATION CONTROLLER

Table 12 Symbol for Irrigation Controller

No.	Designation	Symbol
14.1	Irrigation controller	

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Printed at Prabhat Offset Press, New Delhi-2